

Table of Contents



Different Memory Management Techniques

1. Segmentation
2. Paging
3. Swapping
 1. Swapping in
 2. Swapping out

Paging vs Swapping

Paging vs Segmentation

Related posts:

Memory management is the functionality of an operating system which handles or manages primary memory and moves processes back and forth between main memory and disk during execution.

The essential requirement of memory management is to provide ways to dynamically allocate portions of memory to programs at their request, and free it for reuse when no longer needed.

Different Memory Management Techniques

The following are the three key memory management techniques used by an operating system:

1. Segmentation.
2. Paging.
3. Swapping

1. Segmentation

Segmentation refers to the technique of dividing the physical memory space into multiple blocks.

Each block has specific length and is known as a segment.

Base address: Starting address of each segment.

Segment table: Contains details about each segment.

2. Paging

Paging is a technique in which the main memory of computer system is organized in the form of equal sized blocks called pages.

Page table: Where the address of occupied pages of physical memory are stored.

Paging enables the operating system to obtain data from the physical memory location without specifying lengthy memory address in the instruction. In this technique, the virtual address is used to map the physical address of the data. The length of virtual address is specified in the instruction and is smaller than physical address of the data. It consists of two different numbers, first number is the address of page called virtual page in the page table and the second number is the offset value of the actual data in the page.

3. Swapping

Swapping involves two tasks called

1. Swapping in

2. Swapping out

1. Swapping in

The task of placing the pages or blocks of data from the hard disk to the main memory.

2. Swapping out

The task of removing pages or blocks of data from main memory to the hard disk.

Paging vs Swapping

Paging	Swapping
Paging allows the memory address space of a process to be noncontiguous.	Swapping allows multiple programs to run parallelly in the operating system.
Paging is more flexible as only pages of a process are moved.	Swapping is less flexible as it moves entire process back and forth between main memory and back store.
Paging allows more processes to reside in main memory	Compared to paging swapping allows less processes to reside in main memory.

Paging vs Segmentation

Paging	Segmentation
A page is of fixed block size.	A segment is of variable size.
Paging may lead to internal fragmentation.	Segmentation may lead to external fragmentation.

Paging	Segmentation
Paging involves a page table that contains base address of each page.	Segmentation involves the segment table that contains segment number and offset (segment length).

Related Posts:

1. Operating System: A List of Video Lectures RGPV Notes
2. GATE, Context switch calculation in SRTF algorithm | Prof. Jayesh Umre
3. Introduction to Operating Systems
4. Different Types of OS
5. Characteristics and features of an OS
6. Operating systems services
7. System Calls in OS
8. File Systems
9. How many page faults
10. Process State Diagram
11. Operating System Scheduler
12. FIFO page replacement algorithm
13. LRU page replacement algorithms
14. Optimal page replacement algorithm
15. SRTF shortest remaining time first
16. OS 4
17. OS 3
18. Os 2
19. Os 1
20. CBSE NET 2004 38

21. Cbse net 2004 37
22. Cbse net 2004
23. CBSE Net 2017
24. Ugc net 2017 solved
25. NET 4
26. NET 1
27. Net 28
28. Net 26
29. Net 50
30. Net 49
31. Net 48
32. Net 46
33. Net 44
34. Net 40
35. Net 39
36. GATE, Longest Remaining Time First Algorithm | Prof. Jayesh Umre
37. GATE SRTF | What is the total waiting time for process P2?
38. GATE Calculate Total Waiting Time SRTF algorithm | Prof. Jayesh Umre
39. Concept of Threads
40. Process concept
41. Directory Structure OS
42. Contiguous disk space allocation method
43. File systems
44. Types of os
45. Evolution of os
46. Functions of os
47. Why is operating system a mandatory software?

48. Bankers algorithm problems
49. Diploma Linux Unit 3
50. RGPV Diploma Linnux Unit 2
51. Program to print string in reverse order
52. Program to implement while loop in Linux
53. Program to implement for loop using sequence keyword in Liux
54. Program to implement different types of increment in Linux
55. For loop without in keyword in Linux
56. Program to implement for loop using in keyword in Linux
57. Multiple Processor Scheduling
58. What do you mean by Virtual Memory? Write down its advantages?
59. Compare Paging and Segmentation?
60. What is Process Scheduling, CPU Scheduling, Disk Scheduling? Explain Short, Medium and Long term Scheduler?
61. Explain concept of a process with its components ?
62. Explain the following in brief Contiguous and Linked list allocation for implementing file system?
63. Explain various Disk scheduling algorithms with Illustrations ?
64. Define process and thread. What is PCB ? Explain its various entries with their usefulness ?
65. Discuss advantages and disadvantages of the Buffer cache ?
66. Explain different types of OS with examples of each ?
67. What is an Operating System? Write down its desirable characteristics ?
68. Define a deadlock ? Write down the conditions responsible for deadlock? How can we recover from deadlock ?
69. What are the various services provided by Operating system ?
70. What do you mean by PCB? Where is it used? What are its contents? Explain.

71. What is Binary and Counting semaphores ?
72. What is File? What are the different File attribute and operations?
73. What are System call? Explain briefly about various types of system call provided by an Operating System?
74. Describe necessary conditions for deadlocks situation to arise.
75. What are points to be consider in file system design? Explain linked list allocation in detail?
76. Write a Semaphore solution for dining Philosopher's problem?
77. Consider the following page reference string:1,2,3,4,5,3,4,1,2,7,8,7,8,9,7,8,9,5,4,5.
How many page faults would occur for the following replacement algorithm, assuming four frames:a) FIFO b) LRU
78. Explain CPU schedulers in operating system?
79. Write the different state of a process with the help of Process state deagram?
80. What is Mutex in operating system?
81. Explain Network operating system?
82. What do you mean by paging in operating system ?